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Managing Systemic Change in a Technology-based Education System: A Malaysian Case Study

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Abstract

The increasing use of advanced technologies in educational organizations constitutes fundamental transformation which is certainly required for systemic change of the whole education system. Due to the capability of e-learning in providing dynamic and proactive teaching-learning environment, e-learning has been considered as the most effective technological change that has happened to the field of education systemically. Managing systemic change from e-learning implementation has been also thought of as the integral part of the change process. This is in order to achieve the organizational desired goals and objectives as being an alternative solution to improve the quality of teaching and learning process especially in Open and Distance Learning (ODL) organizations. This paper aims to address the key question of “How do management strategies and policies are effective in dealing with the systemic change?” It also presents the results of an in-depth analysis which is the outcome of a PhD research. From the data analysis for this qualitative research, it was found that in a technology-based systemic change, planning, organizing, guiding and monitoring are the main strategic elements for the management in successful implementation of the new learning technologies.

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Key Words: Systemic Change, Change Management, E-Learning System, Technology-based Educational Environment, Open & Distance Learning

1. Introduction

The increasing use of advanced technologies in educational organizations constitutes fundamental transformation which is certainly required for systemic change of the whole education system. Due to the capability of e-learning in providing dynamic and proactive teaching-learning environment, it has been assumed as explosion of the knowledge economy to deliver and support learning flexibility and cost-effectiveness (Menchaca et al., 2003). Recent implementation of e-learning in educational systems are also considered as the most effective technological change that is widely used by Open and Distance Learning (ODL) institutions in many countries including Malaysia. In result, during the past 20 years, the conventional campus education has changed gradually to the technology-based mode, to improve the quality and flexibility of the learning delivery system, which has been much preferred by working- adult learners. In terms of improving the speed and sophistication of the delivery of teaching and learning in universities, managing process of the change in open and distance institutions is a critical task

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(Bates, 2000) that needs to be carefully planned, organized, guided and monitored. This is in order to make it more flexible, effective and efficient to be used by the learners. In this regard, understanding the interrelationships and interdependencies between the various parts of education system by the management would help them to accomplish their important tasks.

Managing the systemic change from e-learning implementation is the primary part of the change process to achieve organizational desired goals and objectives (Uys & Sieverts, 2001). Therefore, for a technology-based education system to succeed in providing an alternative solution to improve the quality of teaching and learning process, much more than a minor adjustment in the current practices of higher education are needed (Fullan, 2001; Senge, 1999; Uys & Sieverts, 2001). In other words, the current changes from implementation of e-learning system has directed the higher education specially ODL institutions to a revolution in thinking about learning and teaching (Bates, 2000). Hence, the main part of this major transformation is related to the management's effective strategies and policies to deal with the new changes in order to achieve the maximum efficiency.

The common findings of many researchers and research projects (Coimbra Group of Universities in Europe, 2002; Richards et al., 2004; Rossiter, 2006; Uys & Sieverts, 2001; Zellweger, 2006) is that one of the main challenges currently facing universities and other educational organizations is the lack of strategic planning and policy. The key challenge for educational planners and management teams is therefore to identify a long-term vision, mission and strategy that can be delivered effectively through best practice in strategic management techniques to deal with the new changes in a systemic manner.

In a technology-based education system, any change program should be managed as a whole because of the diversity and interactive characteristics of the system. The main requirement for the change management of such a system is to have a clear vision and mission as well as strategic planning with a system perspective in terms of organising, guiding, and monitoring the whole process (Ghavifekr & Sufean, 2010). Since a technology-based change would affect all the institutional levels and aspects of the organization (Russo-Converso, 2001), the effectiveness of management's strategic planning and policies would be more essential in the systemic change situation. This is because the result of a systemic design methodology is a system with interrelated, inclusive, interdependent and internally consistent components which are dissimilar to the conventional common planning design (Banathy, 1991). However, due to the complex and dynamic nature of systemic change, management's strategic planning and policy in a technology-based change is considered as a tool for improvement and development of the educational organizations specifically open and distance learning institutions.

In Malaysia, technology innovation has the critical role to play in creating a competitive advantage for the country's ODL institutions. Previous research has shown that in view of issues and challenges relating to the use of learning technologies in Malaysian higher education, directing and managing e-learning is a complex process which requires change management strategies and policies to deal with the new situation (Hashim, 2007; Poole et al., 2004; Rahimah, 1998; Raja Maznah, 2004). Since technology is the main part of distance education system, strategic planning of change management is more essential for open universities' leadership and should be given more attention.

In line with globalization and the information technology era, e-learning implementation has influenced ODL institutions to recognize change management's strategies and policies as important tools for growth and development. In this regard, the Malaysian higher education institutions are also looked upon by the general public to managing the new changes in the form of educating future workforce to become technology- savvy, innovative and conversant in technical know-how, so as to enable the nation to be competitive and creative (Abas, 2009; Hashim, 2007). Hence, the need for effective ICT-based governance is one of the main elements for change management strategies and policies in the Malaysian education system which will ensure that technology investment decisions are optimized in the system and well planned (Suhaimi et al., 2007).

2. Research Objectives and Question

The main purpose of this paper is to examine the key aspects that influence management strategies and policies regarding systemic change from e-learning implementation in an Open University in Malaysia. More specifically this paper attempts to examine and analyze the dynamic and interactions that are involved in management's strategies for planning, organizing, guiding, and monitoring the systemic change in the ODL institution. In addition, this paper addresses the question how management strategies and policies can be effective in dealing with the systemic change.

3. Methodology

The qualitative research method used for this study analyzed data from three different sources including open-ended interview, direct observation and official documents review techniques. The interviewees were from three individual groups of Open University Malaysia (OUM) members including top management, the Deans, heads and tutors of all five faculties at the Open University. Documents' revision included the university's publishing Annual and Monthly Reports, news papers and public records, books and official brushers as well as articles and papers that were presented in the local and international seminars and conferences. In order to organize and managed the data more systematically, the raw data were analyzed using NVivo 8.2 software. Moreover, to find in-depth data on management strategies and policies for the systemic change in the ODL institution, e-learning system has been categorized as the main theme for this study to achieve more detailed data in format of sub-themes, and sub-sub-themes. The sub-themes are based on examination of the e-learning system with the four main elements of systemic change management including planning, organizing, guiding, and monitoring. In addition, more detailed data emerged from the categorization of sub-sub-themes using grounded theory approach and the "Ladder of Analytical Abstraction" (Miles & Huberman, 1994) for the analyzing procedures.

4. Data Analysis and Findings

4.1 Management strategies for e-learning system as the core component of systemic change

Since the establishment of the Open University in 2001, e-learning has been considered the key element for implementing new changes in the organization. In this ODL institution, e-learning system and Information Communication Technology (ICT) based activities has been played an important role in the continued development and improvement of the university's position locally and internationally. This was due to the rapidly increasing of students' enrolment in the institution during last ten years of practicing (Anuwar Ali, 2008). Being the first open and distance learning institution in Malaysia, the university strongly leverages on e-learning to manage and organize the system in all the levels including educational, technological and financial aspects. This was due to the important role of e-learning as the core component of systemic change management. Therefore, improvement and enhancement of e-learning system had been the main emphasis of the management in order to make any decisions or setting any strategies and policies or using any methods to lead the new changes.

This study found that implementing e-learning system at the Open University was considered as a catalyst for the institution's adult learners to access them to a proactive learning environment. In this study, proactive learning environment refers to more flexible and learner-centred situation that provides dynamic and active interactions between learners and tutors through the online forum as well as face-to face tutorials. The analysis also showed that e-learning system was considered as the core component of systemic change that leads the university to provide opportunities for working adult learners to pursue their higher education. This was in line with the Malaysia's developmental vision to reach the large numbers of IT-skilled workforce and ICT infrastructure by the year 2020. Hence, e-learning was considered as an influential factor in increasing learners' intake at the institution. As pointed out by Anuwar Ali (2008) the president of the Open University, for more progress in the future, the ODL institution needed to be equipped with the appropriate capacity to sustain e-learning system and ICT-based activities. The analysis data showed that the main planning vision of the institution's leaders and management for implementing e-learning system in the organization was to achieve the desired goal of providing education for all. Moreover, in the Open University's context, e-learning system meant to be "as a democratizing tool" (Anuwar Ali, 2008). This was because e-learning system had enabled the university to live by its motto of "University for all" (OUM Annual Report, 2008, p.5). From this specific vision, the leaders and top management of the ODL institution set the main objectives of the organization not only to plan for the systemic change ahead, but also to organize, guide and monitor the new alterations in order to:

- meet higher education aspirations using flexible, accessible and affordable system
- provide lifelong learning opportunities, and
- help the government in the democratization of education (Evidence cited from OUM Annual Report, 2008, p. 5).

Figure 1 shows the overview of the sub-themes and sub-sub themes of this study which emerged from in-depth analysis on the e-learning system with the management functions including planning, organizing, guiding and

monitoring. Analysis and categorizing concepts were made by employing the grounded theory approach in which the data would give rise to the new possible conceptions and theoretical propositions.

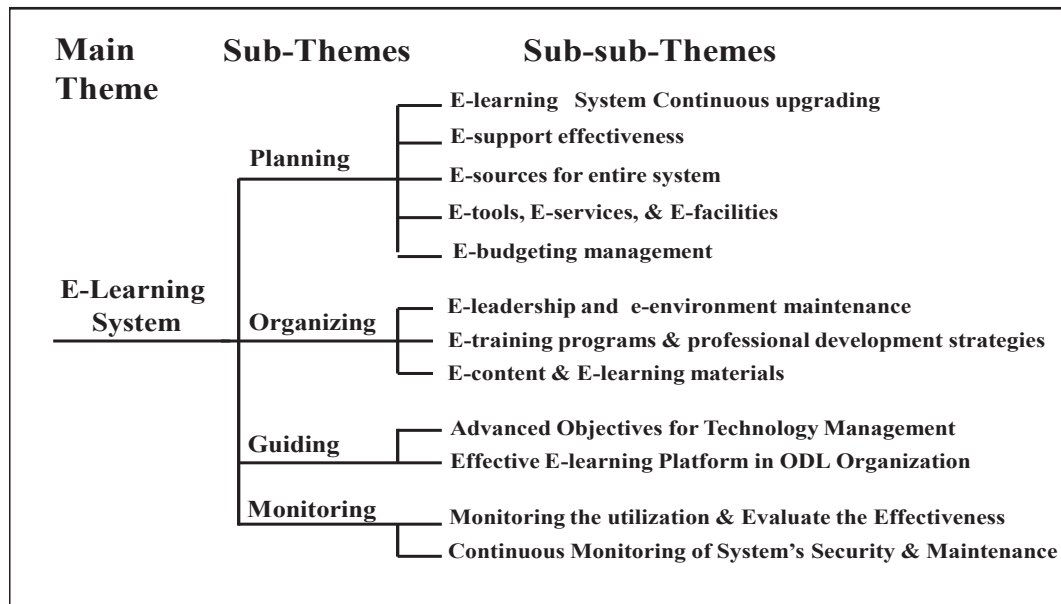


Figure 1. The overview of the main, sub, and sub-sub-themes of systemic change management strategies for an e-learning system

4.1.1 Planning e-learning system

The analysis showed that planning for implementation of e-learning system was strategically an essential process for the Open University's management. This could be due to the importance of learning technologies as being the main element for the ODL institution to improve the education system towards technology-based teaching and learning environment. This study found that, for the effective utilization of e-learning and ICT in education and training, clear vision and strategic planning were the two key prerequisites. While having clear vision could help the management of change to answer the question of "what to change", strategic planning for change would guide the system in addressing the question of "how to change?" This was because, in planning phase, the desired goal of the organization which is the purpose of the systemic change would be set up. The analysis suggested that the importance of strategic planning would be more essential when an organization going through the technological change with the reason of systemic improvement. This study also found that in the ODL institution planning for change from e-learning system comprises five strategies as follows:

- E-Learning system continuous upgrading

Since the main goal of the ODL institution was to develop quality education through advanced technologies, strategic analysis and planning phase played a crucial role in the process of managing e-learning changes in the university. In this context, management strategies were focused more in developing high quality adaptive content. This prerequisite was part of the management strategies and policies for upgrading the e-learning system. Through such a continuous planning, the institution's management was able to respond to the market needs. Therefore, developing and enhancing learning experiences towards the development of a knowledge-based society was centred in this strategic planning for e-learning change management.

- E-support effectiveness

This study found that effectual strategies and policies for technology support was the next effort of the management in planning for the new changes in the ODL institution. Based on the data analysis e-support effectiveness in this study refers to the effective strategies, policies, and methods of the management to support the implementation of the e-learning platform. Correspondingly these supports were in line with the Open University's mission to leveraging on the new technologies in order to improve the learning delivery system. Since investments for e-learning system were an important task for the management, the lack of appropriate strategies and policies to support the successful implementation of the learning technology would lead in the failure of the change process. In-depth analysis showed that effective management's strategies and policies were required not only to assist the "enculturation of e-learning" as mentioned by the president of the open university (Anuwar Ali, 2008), but also to make sure that there are sufficient facilities and resources to supply e-learning system for the purpose of improvement of the learning environment.

- E-sources for entire system

This study found that for effective implementation of the e-learning system providing adequate resources to support the entire system was among the vital strategies and policies of the management for systemic change. According to data analysis e-sources in this study refers to the relevant, effective and efficient resources to support the e-learning system in order to maintain the system for the further improvement. Correspondingly, the management strategies and policies for providing e-sources included two aspects of financial and human sources. In terms of financial e-sources, these strategies included adequate funding to support the needed purchases for hardware, software, and services of the advanced learning technologies. In terms of human sources, employing the appropriate skilled academic and non-academic staff for working in such an e-learning environment were among the management strategies and policies for providing human e-sources.

- E-tools, E-services, and E-facilities

Being the first ODL institution in Malaysia and in order to be a provider of flexible learning, one of the major concentrations was focusing on technology tools, supportive services and facilities. This was necessary to ensure that services to maintain e-learning system were accessible to the distance learners. In this context, the institution's "Learning Management System" (myLMS) was the main e-learning services which facilitate the technology-based teaching and learning processes. For being more effective and efficient, myLMS has been designed to be more user-friendly for the adult learners. Moreover, it has been designed to enrich the learning experiences through participation in online discussion (Abas, 2009; Anuwar Ali, 2008). Apart from the students, the institution's e-learning supportive services also had been used by tutors and administration in order to support their academic and administrative activities.

- E-budgeting management

This study found that for effective implementation of the mentioned policies, budgeting management was the other key strategy for e-learning change management. This includes adequate funding to support the needed purchases for hardware, software, and services of the advanced learning technologies. Employing the appropriate skilled academic and non-academic staff for working in such an e-learning environment also needed sufficient budgeting.

4.1.2 Organizing e-learning system

Based on the analysis, in managing change process after planning for e-learning system there was a need for considering the important role of organizing elements in the planned strategies. Correspondingly, in the ODL institution organizing strategies and policies for e-learning system was more related to the organization's structure and arrangement. In this context, to reach the objective outlined in the planning process, it was essential to structure the activities of the organization. This is due to the management's key strategy in assigning skilled and knowledgeable employees who are relevantly capable to work in the technology-based environment. In addition, understanding the employees' characteristics and their capabilities towards the available resources of the

organization was the crucial strategy for the institution management in dealing with the systemic change. Based on the objective of this study, an in-depth analysis was made on the organizing strategies for e-learning system and the emerging sub-sub themes were narrated in the following sub-sections:

- E-Leadership and e-environment maintenance

This study found that as e-learning was the core element of the ODL system, quality performance of the Open University was mainly dependent on the management of the technology. In this regard, for effective organizing of the technology-based education system, there was a need for people to perform as e-leadership and e-management. In the context of the case institution, e-leadership refers to the variety of management's activities in appraising the educational needs and technological experiences of the target learners. Analysis showed that innovation and research was among the main criteria for e-leadership activities in the critical task for managing the technology-based ODL environment. The role of e-leadership in preparing the organization for systemic change was another strategic task for such a leadership style. E-leadership's ability in managing the ever-changing nature of the e-environment while maintaining balance within all the organizational members had a significant effect in the success of the e-learning change processes at the institution. This is because e-leadership was an efficient style of leadership that ensured the constant quality improvement of the institution as an ODL institution.

- E-training programs and professional development strategies

According to the analysis, providing e-training programs for various individual groups of the staff at the ODL institution was among the management's key strategic planning in dealing with the new changes from e-learning system. These programs aimed to enhance the professional development of the university's human capital. The e-training programs are designed for continuous preparation of the human resources on utilization of the new technologies including effective staffing and tutoring methods and strategies. The participants in the e-training programs were both non-academic and academic staffs of the institution including tutors and facilitators. During the e-training programs usage of myLMS as well as the services which are available in the LMS are demonstrated by the professionals in the field. However, the main reason for organizing such a training program was to enhance the professional development of the organization. Analysis showed that in the context of the Open University, professional development was aimed to have sufficient numbers of people to ensure the general maintenance of the Information Communication Technology (ICT) and its infrastructure. In addition, developing e-learning solution to deal with the new changes was among the key criteria for professional development at the institution.

- E-content and e-learning materials

Since the establishment of the institution as the first Open University in Malaysia, e-learning was the university's primary mode for learning delivery system. Correspondingly, continuous improvement of the e-content and e-materials with the purpose of enhancing the quality of online learning was a crucial strategy and policy of the management. Data analysis showed that the desire to develop more e-content and e-materials in the form of online modules via servers and CD ROM's was the main reason for e-learning change initiatives. This strategy was in line with the university's mission to expand accessibility to quality education as well as providing lifelong learning opportunities through e-learning adoption. However, for the case institution, adoption of flexible mode of learning while providing a proactive, dynamic and engaging learning environment helped to the development of more competitive and affordable cost for the target working adult learners. It also resulted in the rapid increase of student enrolment, not just locally but internationally as well.

4.1.3 Guiding e-learning system

The next strategy and policy of the management in dealing with the new changes from e-learning system was to use guiding elements in order to manage the systemic changes. In this regard, determining relevant principles and values such as learning experiences and the system's outcomes as the two key elements in the Open University's objectives was among the guiding strategies, policies and methods of the management to manage the changes. The other guiding principles of the technology management included concentration on active engagement of the adult-learners in the learning process, appropriate utilization of the multimode media based on the contents'

nature as well as learning objectives of the ODL institution. In-depth analysis showed that there are two main strategies and policies for the management in guiding e-learning system which are as follows:

- Advanced objectives for technology-management

This study found that in guiding e-learning system, considering open and distance learning objectives was the key element for the leadership in managing the technology changes. Based on the data analysis for this study, technology management refers to the management strategies, policies, and methods to guide the e-learning system utilization in line with the main goals and objectives of the Open University as an ODL institution. In this regard the technology management's strategies focused on providing opportunities for enhancement of a flexible, open and distance education through life-long learning in order to attract more adult learners throughout the country. Correspondingly, ensuring alternative cost-effective, dynamic, interactive and collaborative distance learning environment was the main criteria for the technology management in guiding the e-learning system. The data analysis suggested that providing a university system of education which is innovative in one hand and flexible and open in terms of delivery modes in the other hand, was the fundamental objectives of the Open University's technology management.

- Effective e-learning platform in ODL organisation

The next strategy and policy of the Open University management with respect to e-learning system was to provide an effective platform for the utilization of technology. This could be due to the characteristic of e-learning platform as being a fundamental part of the open and distance learning. In this regard, the strategies and policies of the management focused more on ensuring that the learning environment is effective and efficient enough for both the teachers and the students. In the context of the Open University, e-learning platform refers to so called myLMS or the Learning Management System. This study found that effectiveness of the e-learning platform relies on its continuous change and improvement. Correspondingly, the elements such as development of the learning technologies, the requirements and needs of the ODL institution and the users included both teachers and learners, as well as the latest changes in the ODL education were the main reason for the management to attempt for the continuous systemic change and improvements of the e-learning platform. Additionally the importance of budgeting management and cost effectiveness of the e-learning platform are also among the elements which have been highlighted by the interviewees. Based on the analysis, the capability of e-learning platform was an effective and efficient enabler for the tutors to utilize technology in the teaching process at the ODL institution.

4.1.4 Monitoring e-learning system

While planning, organizing, and guiding were the three effective strategies of management for the success of systemic change process at the case ODL institution, monitoring of such strategies was also critical. This study found that when an organization is going through adoption of the new changes for the purpose of system improvement, there is a need for monitoring strategies to ensure the achievement of the planned objectives. In addition, through regular monitoring of the system, management of the Open University were able to know the accurate performance of the various units, centres and faculties. Based on the analysis in an ever evolving environment, the more efforts the management put in monitoring the e-learning system, the better results they would get in achieving the organization's goals. The result of in depth analysis based on emerged sub-sub themes from monitoring e-learning system, were two strategies as follows:

- Monitoring e-learning utilization and evaluating the effectiveness

In order to maximise not only the efficiency of the e-learning system but also its effectiveness in enabling the students to learn, it was found necessary to obtain continuous feedback from the students. The continuous monitoring of the use of the e-learning system by tutors and students provided the management with more detailed on its efficiency in reaching the learning objectives. At the same time, research on the associated technology changes gave the management a comprehensive picture of the effectiveness of the changes. *Google Analytic* and other effective monitoring strategies used by the management for the last nine years have led to the introduction of more interactive and automated learning technologies. *Google Analytic* helped the technology management to get

the data and to understand this data on how much improvement that was needed to put into the system. The Google Analytic provided detailed information including the number of hits, the time of hits, and also peak times of hits, and times when the system was least used. The information provided by this service also helps the technology management with financial planning, and so avoid foreseeable problems in the years ahead.

- Continuous monitoring of the system's security and maintenance

Attention to security was found to be essential to prevent unauthorised access to the e-learning system at the institution. The Open University has maintenance teams with responsibility for the e-learning system, including data security, system availability and performance, and information backup. By monitoring students' login through Google Analytics, the institution technology management was able to enhance the security of unauthorized access. Thus, when students log in to the e-system the management was able to track the place, browsers, and the websites and links that they were accessing. The present e-learning system at the ODL institution provides all the information related to the security of the system's usage, such as audit trail that can do on each transaction done by the users. In this regards, continuous monitoring was the key strategy to maintain the security of the present technology. For more effectiveness, from time to time the technology authorities at the institution try to improve the system based on the users' requirement and the organizational policies. Thus, implementation of any new changes would be suitable for all the stakeholders in the change process. However, to ensure quality, the institution's management continuously improved evaluation and monitoring through system integration and full automation of its administrative activities.

5. Discussion and Conclusion

In the current environment of increasing competition and globalization of markets, it is becoming increasingly important to manage change in educational systems. In the specific context of open and distance education, the management of change involves planned strategies to deal with systemic change including the introduction of advanced technologies such as e-learning. In this regard, dealing with the new changes as well as defining and implementing procedures and technologies to benefit from changing opportunities is the main responsibility for the management of change. This study found that in dealing with the systemic change that happened in the ODL institution, there were certain dynamics and interactions which the management adopted to direct new technology-based environment. The dynamics and interactions from the systemic change were in form of variety of strategies, policies and methods that management made for the purpose of organizational improvement. In line with Levin and Fullan's (2008) suggestion on importance of "management strategy" in educational change, this study found that in the situation of systemic change and innovation in such a complex education system, the organization needs to be managed effectively through the specific strategies and policies.

Comparable to Panda's (2003, p. 66) consideration of management concept as "an art of guiding actions and controlling situations to achieve the desired goals of the organization", this study found that the main perception of management in the situation of systemic change was to plan the strategies, organize the policies and methods, guide the actions and interactions, and control the new situations to achieve the desired goals of the organization. Moreover, this study found that in the context of the technology-based education system, effective and efficient management functions depended on the successful interactions of a number of factors, in terms of their skills, knowledge and attitudes about the new changes. More importantly it depends on the existence of a stable institutional framework in the form of specific strategies, policies, methods, rules and guidelines for the systemic change. This is because without quality leadership and skilful management to direct and lead the change process, even the best ideas are never implemented. As Fullan (2001) pointed out it is not enough to only have a great idea or solution, and the more essential element knows how to implement these ideas. As mentioned in this paper, all the strategies, policies and methods that the management made during the systemic change process was through four main functions of management namely planning, organizing, guiding and monitoring. Specifically in context of open and distance education consideration of these functions helped the management to be able to specify the various dynamics and interactions for each of the key components of systemic change management. Correspondingly, planning was the first tool of the four functions in the management of systemic change. The findings of this study on the important role of detailed and accurate planning of management in success of new changes have similar clarification with many previous research studies (Bates, 2000; Fullan, 2001, 2003, 2007; Menchaca et al., 2003; Panda, 2003; Senge, 1999; Uys, 2000, 2007). The next management function in creating

organizational structure in order to deal with the systemic change was organising. In the context of the ODL institution, formal arrangement of capacities and responsibilities within the organization led to systematized change orders called organizational structure. Comparable with Bateman and Snell (2007), this study found that in organizing change the main focus of the management was to arrange the organizational structure to reach the goals and objectives which have been outlined in the planning stage. Based on the findings of this study, in guiding change the management main focus was on directing and motivating the organizational members to the desired systemic change. In this regard, as in Bateman and Snell (2007), communication and sharing views and ideas with organizational members was the main strategy of the management to guide the organization in the situation of change. This study found that monitoring was the final strategy and policy of the management in leading systemic change to succeed. In this regard, the main focus of the management in monitoring stage was to evaluate the organizational outcomes from both aspects of academic and technical. This study found that in situation of systemic change constant monitoring played an essential role in enhancing the capacity for organizational improvement which is in line with Credaro (2001) point of view on the importance of monitoring for organizational achievement. Comparable to Robbins and Coulter (2005), this study suggests that monitoring performance of the organization in various aspects provide an opportunity for the management to have valuable information about the effect of the new changes in the system, hence this would have helped them to identify the issues and challenges before serious problems could derail the change process. However, based on findings of this study all the mentioned strategies and policies are the necessary approaches in the process of managing systemic changes at a technology-based environment such as open universities.

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